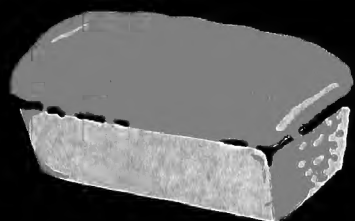


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to escape a *higher* cost of living

THIRTY CENT BREAD



ALFRED W. McCANN



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THIRTY CENT BREAD

A L F R E D W . M · c C A N N

WITH REGULATION NOW, WE CAN HAVE ALL THE FOOD WE NEED FOR HOME USE AND EXPORT TO OUR ALLIES 200,000,000,000 POUNDS. WITHOUT REGULATION WE SHALL HAVE BREAD CARDS AND SOUP KITCHENS WITHIN A YEAR.

THIRTY CENT BREAD

*How to Escape a
' Higher Cost of Living*

BY

ALFRED W. McCANN

MEMBER AMERICAN ASSOCIATION OF CLINICAL RESEARCH

AUTHOR OF "STARVING AMERICA," ETC.



NEW YORK

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DEDICATED
TO
THE UNITED STATES
AND
HER EUROPEAN ALLIES

INTRODUCTION

AT the first day's session of the Sixty-Fifth Congress of the United States, Monday, April 2, 1917, when President Wilson read to the members of both houses, assembled in joint session, the most momentous message which any President of the United States has ever been called upon to make, he said, "It is a fearful thing to lead this great, peaceful people into war—into the most terrible and disastrous of all wars, civilization itself seeming to be in the balance.

"It will involve the utmost practicable co-operation in counsel and action. . . . It will involve the organization and mobilization of all the material resources of the country to supply the materials of war and serve the incidental needs of the nation in the most abundant and yet the most economical and efficient way possible.

"In carrying out the measures by which these things are to be accomplished . . . it will be our very practical duty to supply the nations already at war with Germany with the materials which they can obtain only from us or by our assistance. They are in the field and we should help them in every way to be effective there."

These passages, as inspiring as any passages of that wholly inspiring and never-to-be-forgotten document, apply first of all to foods which, no longer belonging to us exclusively, we are under obligation to divide with allies who face want, if not starvation.

Europe needs our food, needs it in larger quantities than under present conditions we are able to provide. This assertion, literally true at this hour, shall remain true only in so far as we ignore the undeveloped resources that lie at hand. It will remain true only in so far as it rests upon our wasteful standards of the past, our pinched capacities of the present and our failure to heed the unpromising prospects of the future.

Certain changes in our old standards and certain extensions in our present capacities have been urged by earnest and patriotic men. But, at their best, they fall far short of the service which the President expects us to render, which he promised we would render, and which every one of us in abundant and heroic measure is eager to render.

Our lofty expectations cannot be realized. Our earnest promise cannot be fulfilled. Our high duties cannot be discharged unless we go much farther than any of the suggestions heretofore offered or any of the plans now contemplated.

Austria and Germany acted at the very beginning of the war. War bread, grain regulations, meatless days, fruit and vegetable dehydration were introduced at once. Notwithstanding these prompt precautions the pinch of want has made itself felt in the trenches and in the homes of the Central Powers.

England projected no serious food regulations for nearly two and one-half years after war had been declared. France delayed radical action until alarming shortages compelled the belated regulations that went into effect March 12, 1917.

The United States fully understands that she must supply, in addition to her own food, vast quantities

of food for her European Allies. The urgency and abundance of this supply will remain the same whether speedy peace is declared or war continues to the end.

Efficient, victory-winning aid, unaccompanied by misery at home, is what the United States valiantly hopes to extend. Limited aid, much less than we are called upon to render, is all that our present plans, patriotic as they are, make possible.

Here in America, unless these plans are seriously modified and radically extended, bread cards will be inevitable. Already vast numbers of American citizens seriously feel privation.

One New York City butter house, distributing from door to door less than a year ago nearly 100,000 pounds of butter weekly, distributes now less than 60,000 pounds in the same period and this quantity is constantly shrinking. Many people cannot afford to buy butter and are seeking cheaper substitutes, the supply of which is far below the demand.

The same situation is true with respect to meat, eggs, vegetables and fruit. To an ever-increasing extent the plain people must depend on cereal foods. For this reason the necessity of providing the maximum nutritive qualities of our highly milled grain foods is obvious.

We are promised an enormous increase in vegetables. Our ability to conserve the surplus and carry it over is alarmingly inadequate. Half our normal yield of fruits and vegetables rots in the field and orchard. Our hardiest vegetables, as far as their keeping qualities are concerned, are none too hardy.

What we have heretofore kept have been kept in cans. But the canneries are now wholly unable to

take care even of a normal yield. Whatever surplus is produced must perish unless the suggestions made here are acted upon immediately.

By taking action now we can profit by the costly experience of all Europe and thus stand fully equipped to serve democracy to a glorious end. By deferring action we shall lose the greatest opportunity ever presented to a free people and at the same time plunge our prosperous country into the very tragedy which we now seek to avert.

To the end that we may have plenty for our own needs and mighty stores to ship to our European Allies, as fast as bottoms can be provided for their transportation, these words are written.

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THIRTY CENT BREAD

THIRTY CENT BREAD

§ I—FOOD OR FAMINE

UNLESS the United States Government decides to place an embargo at once upon the milling of white flour, the bolting of corn and the destruction of cereals in the manufacture of whiskey, grain alcohol and commercial products, misery lies ahead.

One food shortage after another has been reported. We have been warned and warned and warned. The old story of procrastination is being retold in our official indifference to food preparedness.

For years we have dallied with an unequipped army and navy; have refused to look the future in the face; have blindly trusted in something that all of us now look back upon with regret and bitterness as a policy of "Things-Will-Take-Care-Of-Themselves-If-God-Doesn't."

§ 2—REGULATION WITHOUT MISERY

"If we had only prepared!" we cry. Surely the lessons of our indifferent regard for the future have been learned. Yet, we go on talking vaguely about "the mobilization of the agricultural interests of the nation, about the formation of a commercial economy board, about legislation to limit the period of cold storage and to prevent speculation in foodstuffs,

about nationalizing the vacant lot garden plan, about encouraging the farmer and truck grower to plant a maximum, guaranteeing him against loss through over-production."

These things are all good. They are as laudable as they are inevitable. Nothing can stop them. Primitive forces are at work moving them along. The temper of the people demands them. The instinctive recognition by the masses of an ugly outlook filled with needless privation and preventable suffering will sooner or later express itself in a tidal wave of retribution, furious and overwhelming, that will swamp any man or group of men blind enough, foolish enough or selfish enough to interfere with these imperative reforms.

But what about the system that now depletes our short crops through unnatural commercial processes that not only contribute nothing to the daily needs of the people but which actually withdraw from them both bulk and brawn.

If we continue to refine our cereals drastic regulations will inevitably follow. But, they will follow too late to prevent preventable misery. If we end this system now we shall have the regulations without the misery.

§ 3—FOOD SHORTAGE

When David Lubin, American representative to the International Institute of Agriculture, at Rome, announced, via Paris, April 5, 1917, that the world's food crop is deficient and the situation alarming he sounded what should have been the last word of warning necessary to move us to action.

These were his words, "For the first time in many years there exists a deficit in the supply of corn, wheat, rye, barley and oats estimated at a total of 130,000,000 bushels less than the normal requirements for countries open to trade.

"The situation is worse than was expected last October. We must profit by Europe's experience before meal tickets become necessary. We can avoid high prices by the elimination of waste, by the growing of more food and by effective organization of our food supply, a thing more important than getting men into the army.

"Two months after the beginning of the war Germany forbade the use of wheat or rye for feeding live stock and two months later requisitioned all supplies of food."

To-day we convert priceless wheat and corn into manure. A thousand pounds of corn plus 10,000 pounds of other foods are turned into 500 pounds of dressed beef, one-third of which, in the form of bone, tissue and trimmings, is inedible.

Far better would it be for America now if we took over our packing plants and cold storage warehouses, killed our steers, ate them and converted the whole grain upon which they partly live into unbolted human food than to go on manufacturing manure and misery.

Milk cows are just as important to the juvenile population of the United States as war bread and whole meal foods are important to all the people. Our milk cows must be provisioned. Without milk our babies and younger children cannot live. War demands sacrifice. We must face that sacrifice now.

Steers are not reproductive. Even though we

slaughtered them all we would not by that act affect in the slightest degree our meat supply of three years hence. The beef-yielding steer can become neither father nor mother. We can do without it at least for a time, at least for as long as is necessary in order thereby to provide against famine, malnutrition and decay.

D. T. Gray, professor of Animal Industry, Alabama Polytechnic Institute, and his assistants have demonstrated that cattle can be fed in Alabama at a cost far below that common in the corn belt and this often with inferior, underbred or scrub cattle.

George M. Rommel, chief of the Animal Husbandry Division, the U. S. Department of Agriculture, speaking of the beef-cattle shortage which the United States is facing, says, "The cattle ranges of the west are every year being diminished in area by settlement. In the South, east of the Mississippi River, are enormous areas of practically idle lands suitable for pasture where beef-cattle can and should be raised and fattened."

The government has all the information it needs if it will put the United States Public Health Service, the Bureau of Animal Industry and the other branches of its scientific departments to work in co-operation with army, navy and civilian authorities.

The consumption of grains by cattle and swine when these grains are needed by the human family can be vastly curtailed.

§ 4—FOOD REFORM OR FAMINE

Give us war meal, war bread; save from waste our rotting vegetables and fruits by dehydration;

put an end to the evil system that now converts into slops for feeding hogs the millions of pounds of skim-milk which our centralizers, creamery butter factories and the farmers who supply them make no effort to conserve; stop up the leak through which millions of dozens of eggs, perfectly good when laid, are allowed to rot in their shells before they can be consumed; reform at once the abuses of our fishing industry which are wanton in the extreme and which, if controlled, would add millions of pounds of wholesome food to our national larder every year.

This is part of the programme necessary to enable us to feed ourselves and the rest of the world until the revolution now scourging humanity comes to a happy end.

To supply food for the 1,735,600,000 inhabitants of the countries at war and their neutral neighbors is a world problem. Upon an adequate and efficient solution of this problem rests the physical welfare of humanity. Should red tape interfere humanity will pay the price in hunger. Men will fag, women will wither, childhood will be stunted and infants come into the world without life.

The most agonizing question among all those which now glare under the light of this twentieth century cataclysm is that of the future of the food supply of the masses.

The call to arms in every belligerent country, absorbing all the strength and youth of the nations, draining the farms to fill the factories, are warnings not only against waste, not only against stupidity, but against the repressing and discouraging influences of official red tape.

As long ago as July 15, 1916, Marquis R. Capelli, president of the International Institute of Agriculture at Rome, in a statement to the Associated Press, said:

"Among the ultimate results of this war will be the increasing interest taken by governments in the development of agricultural wealth, namely, BY THE ENCOURAGEMENT OF CO-OPERATION AND ASSOCIATION, by promotion of instruction in agricultural matters, by the creation of many model farms and agricultural intelligence bureaus."

Wherever we look we see, as we never saw before, our interdependence upon each other. Even as the right hand co-operates with the left to clothe and feed the body; even as the eye and ear co-operate with each other to inform the brain; even as lungs and heart co-operate in silent unison with the other glands and organs that provide the brain with energy to direct the whole, so should every department of our national government co-operate with every other department that the trials at hand may be borne without the accompanying miseries which self-willed folly is sure to beget.

§ 5—SHORT RATIONS

As the minds of men are sobered and chastened by an outlook filled with gravity they instinctively recognize the proposition that no national industry and no single arm of the national government shall be permitted to impose its will selfishly upon the nation at the expense of the masses.

It is my purpose here to point out a number of flaws of great magnitude and significance in our

present conception of co-operation as it affects the food supply of the people.

It is quite clear that, peace or war, we face the stern necessity of feeding European soldiers and civilians, even though the inevitable consequence of our programme means hunger at home.

The president of the agricultural committee of the Chamber of Deputies announced, March 9, that France faces a deficit of 127,000,000 bushels of wheat in the coming year.

The same authority declared that the aggregate deficit of wheat for the Entente Allies and European neutrals was between 190,000,000 and 216,000,000.

It is not remarkable, therefore, that the bulk of the foods now demanded from us by Europe should consist of our cereals. But how are we to give them what we haven't got? The obvious but superficial answer is, we can't! The real answer is, we can! even though, according to our own authorities, we already face a shortage at home.

The crop reporting board of the Bureau of Crop Estimates, Washington, D. C., reports that we had less corn March 1, 1917, on our farms by 327,143,000 bushels than we had March 1, 1916.

The same authority reports the quantity of wheat held on our farms, March 1, 1917, was only 101,365,000 bushels, whereas March 1, 1916, we had more than double this quantity, or 244,448,000 bushels.

One year ago we also had on our farms 598,148,000 bushels of oats, whereas March 1, 1917, we had only 393,985,000 bushels.

Of wheat alone, according to officials of the Department of Agriculture, the available supply in this

country will fall 26,000,000 bushels short of meeting our own needs up to next harvest if we continue to export on the same scale as last year.

It is evident, then, that we find ourselves in the position of the head of a household who is called upon to feed a constantly increasing number of children with a constantly decreasing quantity of food. Unless we open our eyes it can't be done. If we do open our eyes it can be done and none of us will be any worse off for our experience.

The European governments, who have had three years of war with all its horrors to educate them, now manifest an interest in the production and distribution of foodstuffs which our own government, even when preparing to enter war regardless of its consequences, showed no signs of imitating.

In Europe the food value of so-called cereal by-products discarded in times of plenty, is now fully recognized. In America, although the situation is just as tense, we do not appear to be interested.

§ 6—WHEAT

We know nothing of the actual quantity of wheat which will be produced in 1917 in the United States. But we do know that the average production for the last ten years is approximately 750,000,000 bushels. Let us hopefully assume that the 1917 production will not be less than 750,000,000 bushels, all of which will be milled into white flour.

As we now conduct our milling processes it requires eight bushels of wheat to produce five bushels of flour. Out of every unit of eight bushels of wheat three bushels of the most nourishing and most indis-

pensable elements of nutrition are rejected by man and turned over to cattle.

Seven hundred and fifty million bushels of wheat, containing fifty-seven pounds to the bushel, will produce, as a result of our wasteful methods, no longer permitted in Europe, 135,912,000 barrels of patent flour weighing 196 pounds each, and 81,792,092 barrels of "waste" weighing 196 pounds each.

France was the last of the European nations to put an end to this waste. March 12, 1917, the French regulations requiring that all bread shall be made of meal containing all of the wheat went into effect.

§ 7—SCARCITY OR PLENTY

If we were to follow such regulations in the United States we would immediately increase our production of flour by 81,792,092 barrels, or nearly one barrel for every man, woman and child in the country.

The quantity of flour now rejected as human food by the United States citizen is in itself sufficient to supply all the flour needs of this country, leaving the balance of 135,912,000 barrels for export.

Yet, if instead of rejecting this quantity of food-stuffs by our present systems of milling we were to convert it to our own use we would have eight loaves of bread every week for every man, woman and child in the United States, thus making it possible in our extremity to share what we have with Europe without loss to ourselves.

Out of every unit of eight bushels of wheat producing five bushels of highly milled flour we produce

four grades known as "patents," "straights," "clear," and "low grades." The "patents" to-day are worth \$10 a barrel, the "straights" are worth \$9.50 a barrel, the "clears" are worth \$9 a barrel, and the "low grades" are worth \$7.50 a barrel. The rejects are worth only what we can get for them.

The nourishing quality of the low grades, which cost \$2.50 less than the "patents," is immeasurably superior to the nourishing quality of the more highly milled, and therefore more expensive, patent flour.

When patent flour is quoted at \$10 a barrel whole wheat flour is quoted at \$7.50 a barrel—just \$2.50 less.

By milling all of the wheat, as is now done in Europe, we not only increase the quantity available for human consumption, but we automatically reduce the price. If we turned the whole of our 750,000,000 bushels of wheat into 217,704,092 barrels of whole wheat flour the cost at this rate would be \$544,260,-230 less than the cost of producing as many barrels of white flour.

The rejected three bushels out of every unit of eight bushels consist of brown bran, yellow germ, and white or gray middlings. Without these three rejected products no flour will support life. With them man and his children can live indefinitely, even though he eats little else.

Thus in time of stress a change in our milling system, which would retain these rejected products, would not only increase the total quantity of wheat products for human consumption by nearly 38 per cent. and reduce the cost by 25 per cent., but it would immeasurably increase the food value of the whole, converting a one-sided, denatured, and inadequate

food into a complete, life-sustaining product containing every element necessary to human nutrition.

The two-headed factor of expediency and economy obliges us to disregard the objections of the milling industry by assuming government control of every bushel of wheat and every pound of wheat products produced therefrom.

There is no need to develop hysteria over the food shortage situation. Even though the Department of Agriculture, April 7, 1917, did show us that we are facing a serious deficit in wheat, corn, oats and barley, and that owing to the extra demands of Europe upon us for these very foods the outlook is exceedingly gloomy, by adjusting our needs to our supply we cannot only go on exporting, without incurring the risk of hunger at home, but we can actually part with much more food than any of our statistics seem to make possible and still leave an abundance for human consumption.

§ 8—CORN

The crop reporting board of the Bureau of Crop Estimates, Washington, reports that we had less corn March 1, 1917, on our farms by 327,143,000 bushels than we had March 1, 1916. But, we are reasonably sure of producing in the United States during 1917 2,500,000,000 bushels of corn.

We have not produced less than this quantity in any one year since 1907. In 1915 we produced more than 3,000,000,000 bushels. It is hardly probable that we will now fall below the lowest record of ten years.

Ordinarily we export about 100,000,000 bushels of

corn annually. Even though in 1917 we should be called upon to export 500,000,000 bushels we would still have for our own use 2,000,000,000 bushels.

Of this amount every year 50,000,000 bushels are converted into glucose and laundry starch. The glucose is used for numberless technical purposes, including the manufacture of pastes, sizes, blacking, printers' rollers, shoe polish, silvering glass for mirrors, liquid soaps, hair tonics, sponges, and in the tanning of leather, the roasting of coffee, the polishing of rice, and the production of logwood.

Enormous quantities of corn are employed in the production of dextrines, used in the textile industries; for strengthening the fibre and finishing the fabrics of cloth, carpets and twine; for the thickening of colors for calico and other printing; for leather dressings; for gums and glues; for ink, mucilages, and adhesives.

Corn oil and paragol are used in the manufacture of soap powders, oilcloth, rubber substitutes, insulating material, etc.

Surely, if necessary, we can do without laundry lump starch, corn soap, and lollypops, in order to add to our food supply the 50,000,000 bushels of corn which annually go into the production of these luxuries.

In the production of grain alcohol, whiskey, and beer from corn grits and glucose another batch of 50,000,000 bushels of corn can be saved for food purposes, thus yielding from these two sources alone 100,000,000 bushels of fifty-seven pounds each.

In the manufacture of degerminated cornmeal we lose 25 per cent. of the protein, 23 per cent. of the fat, and 60 per cent. of the mineral salts of the whole

grain. All the cornmeal of the market place—the only cornmeal obtainable in the grocery store, is degerminated, bolted, refined.

Like whole wheat, whole corn has a fibrous outer skin, beneath which is a layer rich in protein, phosphorus, iron and lime compounds. This is called by Professor Sherman of Columbia University the "gluten layers." Within these layers lies the germ, constituting nearly 10 per cent. of the entire weight of the grain. In the production of hominy, cornmeal, grits, corn flakes and pancake flour the germ is discarded.

"In view of the high food value of the germ," says Sherman, "and the fact that it constitutes about one-tenth of the entire grain, it seems unfortunate that it enters so little into human consumption."

§ 9—EAT THE GERM

The reports of the United States Public Health Service show that there are important health reasons behind the proposition that the germ of the corn should enter into human consumption.

Every year we convert into corn meal in the milling establishments of the United States an average of 210,000,000 bushels of corn, in the refinement of which one-fifth, or 42,000,000 bushels, of the most indispensable parts of the kernel are lost. These rejected substances are sold for cattle food.

The Department of Agriculture at Washington informs us that of the total corn crop from 85 to 90 per cent. is fed to animals on the farms and only 10 to 15 per cent. reaches the human family.

Ten per cent. of a 3,000,000,000 bushel crop would

be 300,000,000 bushels, a quantity which checks up almost to the bushel with the curious and unprofitable uses to which we see our corn products are put.

In times of stress we can easily rearrange the schedule, and instead of wasting the vast quantities now employed for purely technical purposes we can add to our food supply not only the sixty pounds per head as computed above, but also the tremendous saving of 42,000,000 bushels which would automatically follow our use of old-fashioned southern water-ground whole meal as a substitute for the degerminated, highly milled product now on the market.

Forty-two million bushels at nearly sixty pounds each weigh roughly 2,520,000,000 pounds, which would give us annually an additional twenty-five pounds each, or eighty-five pounds in all.

Eighty-five pounds of whole cornmeal will make 170 pounds of whole corn bread, whole corn muffins, whole corn dodgers, whole corn pones, whole corn johnny cake, or three and a quarter pounds per week per man.

This quantity of corn bread, added to the eight pounds of whole wheat bread, which we can also save by changing our milling system, gives us more than a pound and a half of bread daily for every man, woman and child in the land.

And what bread it would be! Not the broken staff of life upon which we now lean, but a beautiful, golden-brown compound containing every element essential to the maintenance of perfect health, strength and life.

When confronted with the necessity of saving foodstuffs heretofore wasted or put to bad uses we

find so much prodigality and so much stupidity that the very urgency of reform should inspire a force big enough to make us see at last, even through the eyes of fear and famine, the folly of our present ways.

§ 10—DRY MILK

We are now wasting 5,000,000,000 pounds of another perfect foodstuff every year.

In the centralizing plants and co-operative creameries of the United States we produce annually more than 1,500,000,000 pounds of butter.

The butter or cream, shipped by rail to the centralizing plant or lugged on a wagon to the wayside creamery, is separated back on the farm or in one of the skimming stations which in recent years have grown up in butter-producing centers.

The cream is poured into cans for delivery to the buttermaker and the skim-milk is disposed of in one of three ways. It goes to the farmers' hogs, becomes commercial casein, or is dumped.

The skim-milk tank of the average skimming station is a thing horrible enough. It stands outside of the station on a platform uncovered, full of flies and other forms of dirt.

The farmer drives up to the edge of the platform, dips from the tank what belongs to him, pours it into cans and goes back to his farm. He does not know the priceless character of the degraded and so-called worthless by-product which he treats as "slops" for feeding hogs.

The production of 1,500,000,000 pounds of butter necessitates the production of 45,000,000,000 pounds of milk. The exact figures for last year, 1916, were

45,049,902,033 pounds. This does not include the milk delivered in bottles or cans for home consumption in the cities or the milk delivered to the cheese factory. It represents the milk in which last year's production of butter, 1,621,796,475 pounds, originated.

This quantity of butter represented 3.6 per cent. of the total quantity of milk produced. The total solids of such milk, less the butter fat, amounted to 9.1 per cent., or 4,099,541,038 pounds of one of the best, although little utilized, foods known to man.

§ 11—CONVERTED SLOPS

If this food were handled in a clean, decent manner and treated as it is treated in France, every pound of it with its precious load of proteins, caseins, sugars and mineral salts could be converted for human consumption.

Following the outbreak of the war, the French government forbade the exportation from France of this food, which by the French is called mammala. Thousands of physicians in the United States had learned the uses of mammala as an infant food, and were prescribing the French product in their ordinary practice.

An American living in Paris, James R. Hatmaker, at once came to the United States and established a mammala factory at Knoxville, Pa., for the purpose of supplying the American trade with the product, which could no longer be obtained from France.

I know the character of mammala, for I have used it for a year in my own household, not only

as an infant food, but in the hundred and one ways in which it can be prepared for the family table.

The value of mammala has been established by the Paris Academy of Medicine as well as by the Congress Hippique (the French association of horse breeders).

This association has proved that a colt fed upon mammala attains its full development much earlier than a colt fed in any other way, and that by its use a horse with a physical development of a "three year old" can be produced in two years.

§ 12—AZOT, THE HORSE

Azot, a colt twenty-six days old, was put on a diet of mammala. It gained two and a half pounds daily, weighing at the end of one year 752 pounds. The
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The feeding with mammala was continued. The young horse never consumed a particle of grain. It reached its full maximum weight in the unprecedented time of eighteen months and ten days, weighing 1,012 pounds.

Its performance in the Grand Prix of Brussels, the French Derby, the English Derby, the French Grand Prix, and the English St. Leger astonished the scientific men who were interested in its remarkable development and extraordinary stamina. It did not have the breeding for sensational speed, but

its feats of endurance were sensational in the extreme.

The theory that a food which can nourish a race horse can also nourish a man has been, through the career of Azot, elevated to the dignity of a demonstrated fact. The milk-fed horse of France now asks America to heed the lesson which it teaches for the benefit of all humanity.

Mammala is a dry, white powder which keeps for several months at a low temperature. It can be reconstructed to the consistency of milk by adding the water that has been taken away in its preparation, or it can be used as a powder in the production of bread, cakes, puddings, soups, sauces, custards, ice cream and vegetable dishes.

As it does not spoil on the way and requires no ice or refrigerator cars it can be shipped in large quantities by freight instead of by express, with the further advantage that as it contains no water there is only one-eighth as much weight on which to pay transportation charges as there would be were it shipped as fluid milk. Furthermore, there are no cans or containers to be shipped back to the dairy and no souring on the way.

It does not have to be consumed within twenty-four hours, but can be held twenty-four weeks or until needed.

If the United States government interested itself in multiplying the unique station at Knoxville, Pa., a thousand times through the butter producing sections of Iowa, Minnesota, Wisconsin and Illinois, we could have at the end of one year nearly 5,000,000,000 pounds of a perfect food now wasted.

This enormous quantity of dry, solid milk would

not be cheese, nor would it be anything like cheese. Cheese loses in the process of manufacture all the soluble salts which are discarded in the whey. Upon a diet of cheese, even though it were reconstructed to the fluid state, infants or children could not live by reason of the withdrawal of these salts.

Mammala contains every blessed element natural to milk. In addition to this, the simple process employed in its manufacture instantly destroys every disease-producing organism which may be contained in the raw milk.

The milk slops now squandered annually would, if decently handled and converted into mammala, have a value of at least 25 cents a pound, or \$1,250,000,000, an amount quite sufficient to equip us with the largest navy in the world.

Are we staggered by the wonders of our neglected food problem? If not, we should be.

§ 13—POTATOES

In estimating the quantity of food which can be rescued from the waste pots of the United States by a policy of reconstruction and conservation inspired by war, we strike a single detail which two and a half years ago seemed to astonish the world.

At that time messages smuggled out of Germany acquainted us with the fact that Germany's war bread was made of a combination of 85 per cent. whole meal (wheat, barley or rye) and 15 per cent. whole potatoes, skins and all.

That the food value of the potato skin should be recognized by the Germans is not remarkable, for the reason that in the treatment of rheumatism,

eczema, uric acid conditions, and many blood disorders the Germans have been among the very first to recognize and prescribe the virtues of alkaline waters.

Mineral springs have been transferred in bottles from Germany all over the world, only for the reason that in the treatment of many diseases due to the consumption of too much food of the wrong kind, or not enough food of the right kind, alkaline waters have demonstrated considerable virtue.

The Germans know that the outer layers of the potato contain alkaline solubles of great value, and that during times of easy prosperity and thoughtless luxury these alkalines are squandered by a system of preparing the raw potato which robs it, through the thick peels removed prior to boiling or frying, of 25 per cent. of its gross weight.

Germany's war bread immediately increased the supply of available potatoes 25 per cent. by putting an end to the 25 per cent. waste.

In the United States we produce annually nearly 400,000,000 bushels of potatoes. The German system of utilizing the whole potato, if applied to the United States, would save from the garbage can nearly 100,000,000 bushels of potatoes annually, or one bushel for every man, woman and child in the country.

Thousands of American citizens are already acquainted with the virtues of the baked potato jacket. When steamed in a double boiler the thin outer skin falls away from the cooked tuber, with none of the best parts of the potato adhering.

Baking and steaming, as far as potatoes are concerned, recommend themselves to war's attention.

§ 14—BARLEY, RYE, RICE

Of barley we produce annually nearly 200,000,000 bushels. This at once goes through the pearling or refining process, which gives us our "pearled" barley or denatured barley of the market place and robs us of 20 per cent. or 20,000,000 bushels.

If one should say that this is not so, for the reason that a large quantity of our barley crop is malted for brewing purposes, the situation only becomes worse and the loss, as far as human food is concerned, is not only doubled but trebled.

We would have annually at least twenty-five pounds of barley for every man, woman and child more than we already have if we reformed our barley milling system.

Of rye we produce annually 40,000,000 bushels, most of which goes into whiskey. If we do to whiskey in war time what the Russians did to vodka we will save for every man, woman and child another unit of twenty-five pounds of one of the best bread grains that ever came from the shell.

We really know nothing of rye bread in the United States. The silly, anæmic thing that is sold in our bakeshops as rye bread is not rye at all. It consists of 90 per cent. patent flour and 10 per cent. rye flour. With the characteristic flavor and virtue of neither wheat nor rye to recommend it, it is not wonderful that its colorless personality appeals to no one.

Of rice we produce, approximately, 30,000,000 bushels, a large part of which finds its way into beer. All the rest is polished. By consuming natural brown rice we save 20 per cent. of the grain, including its most indispensable elements. This saving

represents 6,000,000 bushels, or four pounds per person.

§ 15—SAVED

Leaving oats and all other foods out of consideration, we find that the economy system now practised in France and Germany would yield for every man, woman and child in America over and above the food we already have:

196 pounds whole wheat meal
85 pounds whole cornmeal
45 pounds mammala
60 pounds potatoes
25 pounds unpearled barley
25 pounds whole rye
4 pounds natural brown rice
Total, 440 pounds.

Let us examine the meaning of these figures. Modern dietitians tell us that the adult needs approximately 3,000 food calories a day. The caloric value of the saved foods enumerated above, estimated in pounds, is—whole wheat meal, 1,628; whole cornmeal, 1,620; mammala, 3,680; potatoes, 378; unpearled barley, 1,603; whole rye meal, 1,626; natural brown rice, 1,600.

If you will take paper and pencil and figure the caloric value of the 440 pounds of whole unprocessed foods tabulated above you will find that they will yield 721,988 calories. This amount, not taking into consideration the fact that infants and children require much less, will supply all the needs of 100,000,000 adults for 240 2-3 days.

If we take into consideration the fact that a large

proportion of the population of the United States consists of old people and very young people whose caloric requirements range from 500 to 2,000 a day, it can be readily seen that the saving of the seven foods enumerated will yield exactly enough, even though all other foods had no existence, to nourish the entire population of the United States for an entire year.

It will be seen also that the foods considered here are complete and adequate foods containing every element necessary to the maintenance of life and health.

This means that the food resources of the United States are simply prodigious. If the waste by-products of seven foods of the hundred available are alone sufficient to support our national life, what is there to justify alarm? Food famine nor any of the hideous consequences that lift up their heads from such a nightmare will be impossible if we ACT!

The trouble is that we do not know the United States, and doubtless never will until the consideration of serious things such as war makes us look within.

§ 16—FOOD FOR ANIMALS

"What will we do for milk, bacon, eggs, and pork if we turn all our wheat into whole wheat flour?" asks a critic. "Our live stock industry depends upon the ability of the farmer to obtain from the wheat mills the bran, the red dog, the germ, and other by-products discarded in the manufacture of white flour," he adds.

"If the United States should adopt the methods of Germany and France in milling nothing but the

whole grain the disappearance of these by-products from the farm where they are used in feeding cattle, poultry, hogs, etc., would cause such a scarcity of milk, bacon, eggs, and pork," he continues, "that only a wealthy few could pay the price to which they would skyrocket. How would we feed our pigs and our dairy cows if we ate whole wheat bread in the United States?"

This critic, whose objections are based upon sincere anxiety, is totally ignorant of the food situation. Apparently he knows nothing about the 2,000,000,000 bushels of whole corn which is set aside annually in the United States for cattle food, hog food and chicken food.

Apparently he knows nothing of the flaxseed crop (14,000,000 bushels), the hay crop (85,000,000 tons), the oat crop (1,229,182,000 bushels), or the peanut crop (20,000,000 bushels).

Corn, flaxseed, hay, oats and peanuts are among the most important feeding stuffs now utilized on the farm.

In addition to these foods we have 100,000,000 acres under grass for grazing purposes, and 240,000,000 additional acres that could be utilized.

We produce millions of tons of cottonseed meal, cottonseed feeds, linseed meal, pea meal, bean meal, cocoanut meal, sugar feeds, rice meal, dried beet pulp, dried molasses beet pulp, corn stover, corn cob, soya bean meal, and the other concentrated commercial feeding stuffs, which are used in such enormous quantities in nourishing our milk cows, horses, chickens, and pigs for the production of milk, steaks, roasts, chops, ham, bacon and eggs.

Apparently our critic does not know that if cows,

hogs and chickens were never to obtain an ounce of wheat bran, red dog, wheat germ, middlings, or any other of the discarded by-products of our patent flour industry they would go on eating just the same from the superabundance of feeding stuffs classified above.

Radical reform, urged by necessity, in our present system of refining wheat for human consumption would not affect in the slightest degree any of these foods now so extensively used by the live stock industry of the United States.

The quantity of feeding stuffs now produced by the flour mills from bran, red dog, germ, and middlings in the refinement of 750,000,000 bushels of wheat is exactly 8,100,000 tons, or less than 10 per cent. of the weight of the hay crop alone.

The total savings which a reform system of wheat milling would transfer from the food of cattle to the food of men, women and children in the production of whole meal bread amounts to less than 1 per cent. of the total food now available for our animal industry in the United States.

The Geneva Experiment Station has given us the analyses of hundreds of cow foods, hog foods, and chicken foods which contain not one particle of wheat bran, red dog, germ, or middlings.

With farina, a pure white by-product of the patent flour mill, which will not support life, selling in fancy packages throughout the United States at 10 cents a pound, or \$19.60 a barrel, while whole wheat meal, which will support life, is quoted at \$7.50 a barrel, only to go begging among the ignorant, it is high time that the plain people should be warned of

what is in store for them unless they abandon their foolish food luxuries and go back to first principles.

§ 17—HURRYING THE END

Already Argentine has placed an embargo on her exports of wheat and wheat flour. With a short crop at home, the Argentine government has found it necessary by this act to provide against the future.

This simply means that the world's supply of wheat has already been reduced and that there will be a greater demand than ever upon the wheat crop of the United States, with not one chance in one thousand of a decrease in prices.

No good can come of burying our heads in the sand. We know that there is a shortage of crops all over the world.

We know that millions of men have been taken out of our productive industries to toil only in the interests of destruction.

We know that hundreds of thousands of men who might be on the farms are in the factories.

We know that the extortions of food gamblers and price boosters are still at work.

The immediate remedy for the evils which this conspiracy of fate, ignorance, selfishness, and intrigue has brought about lies in our return to first principles—the first of which is the elimination of waste.

§ 18—FRUITS AND VEGETABLES

For the last ten years there have been available in the United States a number of drying processes

for the conservation of fruits and vegetables. These processes, filled with promise of economic revolution, have not only been neglected, but to the shame of a few privileged persons in high places they have been discouraged.

This oppression, applied by red tape, has not only cost the farmers of the United States millions of dollars but it has robbed the army, the navy and the civilian population of thousands of tons of food-stuffs, the possession of which at this hour would provide that vast reserve of power the insistent need of which we already keenly feel.

Had the dehydrating processes of the United States, which have improved a hundredfold upon the processes which have contributed so much to Germany's physical necessity, been permitted to flourish as they should have been, our present state of unpreparedness, as far as food is concerned, would not now occasion such bitter anxiety.

Before the outbreak of hostilities 425 drying establishments were operating in Germany. During the last three years the German authorities have placed additional establishments in every agricultural zone of the country to take care of the slightest temporary surplus of farm products, thus preserving for the days of shortage fruits and vegetables which in the United States are allowed to go to waste.

There are only four of these establishments in the United States and their products, although received with tremendous enthusiasm by the army and navy, have been, for some strange reason which a Congressional inquiry may disclose, stricken from the list of army and navy supplies.

This fact stands directly behind our inability during the past three years to supply the fighting nations of Europe with what they wanted and needed to their own benefit and to the benefit of our own agricultural interests.

It is not too late to institute at once a policy of co-operation which will at least to some small extent repair the damage already done and to a far-reaching extent provide against the needs of the future.

§ 19—ARMY AND NAVY

A comparison of the army food supply of Germany and Austria (the food supply of France is similar) with the rations of the United States army emphasizes the importance of the dehydrating industry which in Germany has been encouraged to such an enormous extent and which in America has been curiously and strangely repressed.

The ration for daily distribution in the German army consists of:

war bread (whole meal)	750 grams
fresh meat	375 grams
dehydrated vegetables	250 grams
sugar	17 grams
wine and beer	when possible.

The rations of the Austrian army consist of:

war bread (whole meal)	700 grams
fresh meat	400 grams
dehydrated vegetables	140 grams
fat	20 grams
coffee	4 grams

sugar	46 grams
wine	200 c.c.
	(a half pint).

In Germany the dehydrated vegetables are called "herbswuerst." Herbswuerst consists of a mixture of dehydrated soup greens, dehydrated onions, dehydrated carrots, dehydrated potatoes, dehydrated cabbage, dehydrated spinach and beans.

The encouraged German processes, which are much inferior to the discouraged American processes, consist in partly boiling the vegetables, thus losing a considerable proportion of their extractives and then in drying the products at a high temperature.

This treatment causes a radical change in the physical appearance and chemical properties of the dehydrated foodstuffs. To make them fit for the table they require recooking and while unquestionably nutritive and of great value in contributing vegetable alkalines to the diet of the soldiers, they are not over-palatable nor do their flavors closely resemble those of the fresh vegetables.

§ 20—BETTER THAN GERMANY'S

The American processes are superior to the German processes in that they do not boil the fruits and vegetables at all. They treat them at a much lower temperature in a manner which insures a thorough circulation of the air currents so as to reach every particle of the product undergoing dehydration.

As a result the American process does not injure the cellular membranes of the vegetable matter and

not an atom of the flavor, color or nutritive value of the product is lost.

The American products with which I have been intimately familiar for seven years retain a fulness of fresh flavor when prepared for the table, and because their cellular structure is uninjured in the process they acquire a normal appearance both as regards form and color after being allowed for a short time before cooking to reabsorb the water originally taken from them.

§ 21—ROT ON THE GROUND

The United States Department of Agriculture informs us that fully 50 per cent. of all the vegetables and fruits grown in America never reach the consumer. They rot on the ground.

This tremendous loss is due to difficulties of transportation combined with the fact that only the fanciest quality of fruits and vegetables will pass final market inspection for profitable shipping and trading.

The American dehydrating processes, if now encouraged by the army and navy, instead of being suppressed by them, could conserve every particle of these waste products, contributing tremendously thereby to the wealth of the farm and adding thousands of tons of perfect foods to the nation's dietary.

Moreover, through their use everything grown on the farm and in the orchard can be conserved so as to keep indefinitely. They can be marketed at a price well below that of the so-called fresh products which are to be had only at certain seasons of the year.

To-day the farmer is hemmed in by local markets. To-morrow, if Congress acts in behalf of the dehydrating industry, the farmers' products, when dried at nearby or conveniently located plants can be cheaply delivered to any point in Europe and America and just as cheaply stored for use until needed.

A truck-load of vegetables and fruits after dehydration weighs but a hundred pounds and fills only a single barrel.

On an order of 26,000,000 pounds of canned or fresh vegetables the United States army must pay transportation charges and the cost of labor in handling on 19,500,000 pounds of water.

§ 22—SHORTAGE OF TIN

The price of tin to-day is so high and the cost of glass containers has advanced to such a degree that the manufacturers of canned goods are desperate.

The American Can Company is taking care of its three-year contracts but is rejecting all overtures from the great mass of buyers of tin containers known as "shoppers."

The dehydrated fruit and vegetable is independent of tins, cans or glass containers. Paraffined paper containers or paper-lined barrels are all these humble but priceless foods require.

These are the reasons offered by the canned goods industry in explanation of the tremendous advance in the price of canned goods.

This shortage in tin cans, plus the necessity of conserving foods now wasted and the vast savings made possible by packing, storing and shipping dry

solids instead of water, should force the Federal Government to foster and encourage the use of dehydrated vegetables and fruits.

For large forces of men engaged in military operations far from a base of supply as well as for naval use the dehydrating methods of preserving foodstuffs are indispensable.

Because of their low moisture content dehydrated foods, which are not subject to attacks by molds or bacteria, will keep indefinitely.

§ 23—NO LOSS

Experiments conducted by the Department of Agriculture at Washington have shown that there is a loss of 25 per cent. in the peeling and preparation of the potato alone, another loss of 15 per cent. by rotting before the supply is consumed, so that only 60 per cent. of the fresh potatoes purchased ever reaches the table for consumption.

In the dehydrated potato there is no loss from any source and the handling, transportation and storage of 80 per cent. of the water content in the fresh potato is avoided.

So perfect is the flavor of the finished product that the largest manufacturer of pure fruit flavors in the United States uses the dehydrated raspberry in capturing its delicate and elusive fragrance for his product.

These facts, the profit of the farm, the conservation of enormous quantities of foods now going to waste, the easy handling, storage and shipping of foods needed all over the world, the preparation of concentrated rations indispensable to a large army

and navy and the general excellence of the finished product rise to confront the whimsical and arbitrary red tape in army and navy which has not only resulted in the discouragement of the dehydrating industry but which makes us now unable to supply the nations of Europe with the product demanded by them. An accumulated reserve of these foods, held over from other years, could have been ready for use now. That it is not at hand only emphasizes the importance of acting at once.

Behind these facts lies the 1914 report of the Quartermaster General, War Department, United States Army, in which appear these words:

§ 24—THE TEST

“After soaking and cooking the dehydrated vegetable closely resembles the fresh product and also as to taste and quality. This new form of treating vegetables makes them somewhat like the old desiccated vegetables in use in the army in previous years but superior in quality and flavor.

“During the years 1898 and 1899 the difficulties experienced in shipping fresh vegetables to the Philippines suggested the use of desiccated vegetables, which at that time were extensively used by miners in Alaska and other remote mining regions.

“Considerable quantities of desiccated potatoes and onions were purchased for the Philippines and on occasions were issued to the troops in lieu of the fresh articles. There was such a general prejudice against these vegetables that the Subsistence Department was left with a large stock on hand which eventually became a loss. The fresh vegetables are

now dehydrated under a new and improved process and the quality has been improved.

"Very satisfactory reports have been received from tests made with these vegetables at Washington Barracks and at Galveston and Texas City."

These facts are inexplicable when it is considered that the United States army, in spite of its own experience, refused to consider the new product in feeding the troops mobilized along the Mexican border in 1916.

The report goes on as follows:

"As one pound of dehydrated potatoes equals about $6\frac{1}{2}$ pounds of the fresh and one pound of dehydrated onions equals about $12\frac{1}{2}$ pounds of the fresh the saving in transportation of these vegetables for a large command would be enormous and it would appear desirable to adopt these vegetables for use in the field if it can be shown that they have sufficient merit to recommend themselves to the troops.

"The dehydrated products consist of beans, carrots, corn, onions, beets, potatoes, tomatoes, turnips, spinach, cabbage, etc. As potatoes and onions are the principal fresh vegetables used in the army it was considered advisable to make a practical trial of these new products with troops actually in the field, for these products would derive additional value as a food element in subsisting troops in case of war and when conditions were such that fresh or canned vegetables could not be supplied.

"Therefore, 2,000 rations of potatoes and 5,000 rations of onions were procured and forwarded to the Second Division for a thorough test in the field and by the troops."

Unknown to the army dehydrated potatoes, onions, cabbage, apples, turnips, carrots, soup greens, cranberries, spinach, celery, rhubarb, blueberries, tomatoes, garlic and parsley were used in 1913 and 1914 on the battleships *Utah*, *New Hampshire*, *Louisiana*, *Ohio*, *Florida*, *Hancock* and *Nebraska*.

They were also used at the Newport Training Station, in the Provision and Clothing Department, Brooklyn, and in the Philadelphia Navy Yard.

The Depot Commissary of the Canal Zone Executive Department reported to Governor George W. Goethals on the very excellent grade of soup obtained by him through the use of these vegetables. Goethals responded by approving the recommendation and memorandum requisition of the Depot Commissary for a supply to be shipped to the isthmus.

Dr. Carl Alsberg, chief of the Bureau of Chemistry, Department of Agriculture, says, "The subject of drying of vegetables is in line with the preparedness propaganda."

David Franklin Houston, Secretary of Agriculture, urges the conservation of food products by the farmers of the United States.

The dehydrating establishments have offered to co-operate with the Washington authorities by placing at the disposal of the government all their processes and plants.

T. J. Cowle, paymaster general, U. S. Navy, reporting to the Navy Department on his tests with dehydrated fruits and vegetables, September 17, 1913, says:

"Peaches, raspberries, spinach, yellow turnips, carrots, soup vegetables (onions, parsley, cabbage,

celery, etc.), sliced green string beans, tomatoes and rhubarb were submitted for test. Quantities of each of the above dehydrated products were placed in tepid water and allowed to soak. At the end of forty-five minutes they were found to be ready for cooking with the exception of the string beans and rhubarb which required one and one-half hours.

§ 25—CARROTS

“The carrots after soaking were drained and cooked in boiling water to which a small amount of soda was added. At the end of thirty minutes they were completely cooked and of excellent flavor and appearance. The carrots are in sliced form and can be served as mashed vegetables or added to stews.

§ 26—TURNIPS

“The turnips were cooked similarly to the carrots, forty-five minutes being required. They were readily mashed smooth and soft and were of good flavor. Like the carrots the turnips are in sliced form and may be used as a vegetable or in combination with other articles of food.

§ 27—SOUP VEGETABLES

“It was found necessary to boil the soup vegetables for an hour. One of the ingredients, string beans, was still tough and hard at the end of forty-five minutes. Very good results were obtained with the use of the soup vegetables but it is thought that they would give more satisfaction if the string beans

were eliminated as the other ingredients became soft and ready for use sooner than the latter.

§ 28—SPINACH

"The spinach was prepared in the same manner as the other vegetables. During the soaking process the odor of dry grass was noticeable. After twenty-five minutes' cooking the spinach was seasoned with butter, salt and pepper and found to be of very good flavor; the odor of dry grass had almost entirely disappeared. The spinach is in the form of whole leaves and so has the appearance of the fresh article when cooked.

§ 29—STRING BEANS

"It was necessary to soak the string beans for an hour and a half before they became soft. They were soaked in boiling water with a little soda for an hour and a half and were then found to be very stringy and to have a flavor similar to that of canned beans.

§ 30—TOMATOES

"The tomatoes were soaked in sufficient tepid water to just cover them for forty-five minutes, more water being added from time to time as it was absorbed. They were then placed on a range in the same water and simmered until tender. After seasoning with salt, pepper and butter the flavor was found to be excellent. The skins had not been removed before dehydration. This detracted both from the appearance of the tomatoes when cooked and from the pleasure of eating them.

§ 31—RASPBERRIES

"The raspberries after cooking were simmered in the same water. Sugar was added and after twenty-five minutes' cooking was complete. The raspberries were very tasty but not attractive in coloring, being a purplish-brown shade.

§ 32—PEACHES

"The peaches were treated similarly to the raspberries except that forty-five minutes were required for soaking. Flavor and appearance were excellent.

§ 33—RHUBARB

"The rhubarb required an hour and a half to soak and was then cooked in boiling water for forty-five minutes, sugar being added from time to time. Very good flavor and appearance were obtained.

§ 34—RESULTS

"The results, with the exception of the string beans, were most satisfactory. As was remarked in the report of a test of other dried vegetables previously submitted these articles are a nearer approach to the fresh than any other which have been tried at this station. In all cases, string beans included, they are as good as canned goods and of course require less storage room aboard ship."

This remarkable report covered dehydrated fruits and vegetables as they were prepared four years ago.

Good as they were then they have since been vastly improved. To-day the entire nation needs them.

Contracts made between wholesale grocers and canned goods manufacturers indicate that the price of all canned goods, partly due to the increased prices of tin, will be 33 per cent. higher in 1917 than they were during the high priced year of 1916.

With such a report on hand as that submitted to the Navy Department, September 17, 1913, the necessity of dehydrating and using the fruits and vegetables that canners have never even attempted to pack becomes an imperative federal duty.

In addition to the reports received from tests made with dehydrated fruits and vegetables at Galveston, Texas City, Washington Barracks, the Canal Zone, Philadelphia, Brooklyn and aboard seven U. S. battleships, the commanding officer at the Naval Training Station, Newport, R. I., reported, May 6, 1913, to the Bureau of Supplies and Accounts, Navy Department, regarding the tests made under his direction on dehydrated fruits and vegetables.

The report stated, "The articles tested were potatoes, onions, cabbage and apples.

§ 35—POTATOES

"The potatoes were in the form of crisp white chips which, when soaked in water, assumed the appearance of sliced fresh potatoes. The best results were obtained by placing the potatoes in cold water in which a small amount of sodium bicarbonate had been dissolved, and immediately placing the whole on the fire where the potatoes were allowed to come to the boiling point slowly. The potatoes were then

cooked thirty minutes from the time the boiling commenced. They were perfectly smooth and white when mashed and could not be distinguished from the fresh article. In flavor, although a slight difference could be detected between this article and the fresh potato, it is the nearest approach to the fresh potato that has yet come under the notice of the commissary department of this station.

§ 36—ONIONS

“The onions submitted were in the form of thin dried slices which easily crumbled between the fingers. The most satisfactory method of cooking was found to be soaking in cold water for a half hour and then placing on the fire to boil. For frying the best results were obtained by soaking in cold water for one hour and then draining and frying in a small quantity of fat. The results were most satisfactory, the onions having the appearance, odor and color similar to fresh article.

§ 37—CABBAGE

“The cabbage submitted was in the form of dried leaves which crumbled easily. The leaves were soaked in cold water for one hour and then boiled with a small quantity of salt pork until tender, about one and one-half hours. The flavor was very good but the color brownish, due to the length of time consumed in cooking. A quantity of the dehydrated cabbage was again soaked and boiled as before. But this time a small quantity of sodium bicarbonate was used in the boiling. The result was noticeably bet-

ter, the color being whiter and the flavor better. A third test was made by placing the cabbage in cold water in which a small quantity of sodium bicarbonate had been dissolved and then allowing the whole to come slowly to the boiling point. A small piece of salt pork was added and the cabbage boiled for thirty minutes. The color was perfectly white and the flavor difficult to distinguish from that of fresh cabbage.

§ 38—APPLES

"The apples were in the form of dried slices of cored and peeled apples but did not crumble easily when handled. They were soaked for thirty minutes and then cooked on the range in the same water. No trouble was experienced in cooking the apples soft enough and when made up in the form of sauce and pie the results were excellent, the color and flavor being superior to some fresh cooking apples."

§ 39—THE BIG REASON

The imperative necessity of adopting the dehydrating processes in order to save for the food of army, navy and civilian population the hundreds of thousands of tons of fruits and vegetables which annually go to waste in the United States, is based upon the issues of public health as well as those of immediate economy.

Fruits and vegetables are indispensable to man for the reason that they supply the needs of his body with alkaline salts in a form in which they can be utilized. To the absence of these alkaline salts many grave, physical disorders are traceable.

From the fruit and vegetable as well as from unbolted cereals we obtain iron, lime, potassium, magnesium, silicon, sodium, fluorine and iodine. Without these mineral salts no army can withstand the rigors of trench life and no civilian can escape anæmia, tuberculosis and the hundred other evils which follow in the wake of a restricted mineral diet with its accompanying loss of vitality and feeble resistance to disease.

The last word on this subject, which should go straight home to every department of our national government interested in the production and distribution of foodstuffs, comes through E. B. Forbes, chief of the laboratory of the Agricultural Experiment Station at Wooster, Ohio.

§ 40—SCIENCE

Forbes enumerates the functions of the mineral salts in animal nutrition as follows:

"As bearers of electricity the mineral elements dominate the whole course of metabolism.

"They conduct nerve stimuli, and play a leading rôle in the general process of cell stimulation.

"They govern the contraction of the muscles, including those of the heart.

"They compose the central agency for the maintenance of neutrality in the blood.

"They enter into the composition of every living cell.

"They compose supporting structures.

"They assist in the co-ordination of the digestive processes.

"They activate enzymes, and through their con-

trol of the chemical reaction of the blood and tissues they govern enzyme action.

"They unite with injurious products of metabolism, and render them harmless or useful.

"As catalyzers they alter the speed of reactions, and the rate of metabolism generally, as measured by oxygen consumption.

"Through their effects on surface tension they participate in the mechanism of cell movement.

"Through their control of the imbibition of water by the colloids they govern absorption and secretion.

"Through their control of the affinity of the blood for gases they govern respiration.

"Finally, they control the state of solution, precipitation, mechanical aggregation, chemical association and ionization of the colloids which compose living tissue.

"These then are some of the functions of the mineral elements. Considering their nature and importance, it is at once obvious that life could not endure if its complex mineral requirements were not automatically and constantly maintained in almost perfect adjustment.

"What then are the facts which warrant the practical consideration of this subject?

"They are that in pathological states these functions are somewhat deranged, and that life as we live it is in many respects highly abnormal, in the sense of differing from that to which human metabolism is attuned; and with our ever-increasing social differentiation life puts increasing stress upon the integrity of the body and its normal processes.

"In relation to food materials there are also important facts bearing on this matter of the mineral

nutrients, for while highly developed processes of food manufacture and efficient world-wide transportation give us the greatest opportunities for correct dietetics that there has ever been, these same agencies open the way to greater unwisdom and abuse in dietetics than have been possible in our more primitive days. The net result is an obligation on our part to prepare a defence of knowledge against the misfortunes of prosperity.

"Calcium, phosphorus and iron are more likely than other mineral nutrients to be lacking in human dietaries. On this account especial interest attaches to their occurrence in food. Calcium is especially abundant in milk, and is also contained in considerable quantities in eggs, VEGETABLES AND FRUITS.

"Phosphorus is abundant in milk, eggs, nuts, peas, beans and such cereal products as contain the outer seed coats (germ and bran).

"Iron is found in largest quantities in beef, eggs, beans, peas, green vegetables (especially spinach) and in the outer seed coats of the cereals (germ and bran).

"The foods which are poorest in minerals are polished rice, pearl hominy, white flour, bolted cornmeal and other cereal foods which lack the outer seed coats.

"These foods, because of their highly digestible character and lack of salts, are apt to be constipating. Magnesium is abundant in the cereals and is not apt to be deficient in normal rations. The magnesium salts of the outer seed coats of cereals contribute a laxative character to foods containing them.

"Potassium is found in considerable quantities in

fruits and vegetables. Manganese, boron, silicon and iodine are also found in fruits and vegetables.

"Generally speaking a high mineral content of the food is desirable since the organism is much better able to handle an excess of mineral constituents than to meet a deficiency.

"It is a good practice, therefore, to utilize the water in which foods are cooked since the cooking water dissolves out much mineral matter.

"An abundance of mineral salts in the diet is also desirable aside from nutritive considerations because they contribute a laxative character to the food. Foods which are deficient in minerals are apt to be constipating.

"Vegetables, milk and fruits contain alkaline salts. The latter group should be liberally represented in the diet.

"The control features of improperly chosen diets are usually an undue dependence upon meats and foods made from finely milled cereals or other cereal foods lacking the outer seed coats (bran and germ) and too little use of milk and vegetables."

These comments of Forbes are sufficient in themselves, even though they stood alone (they do not stand alone) to command the consideration of Congress to the effect that the dehydrating industry may immediately be put to work for the purpose of adding all the fruits and vegetables now wasted, with all their precious freight of alkaline salts, to the diet of America and America's allies.

§ 41—WOMEN AND CHILDREN

In addition to the comments of E. B. Forbes, chief of the Agricultural Experiment Station, Wooster, Ohio, upon the importance of the alkaline mineral salts of fruits and vegetables to the diet of soldier, sailor and civilian, he contributes to the philosophy of nutrition other elements of scientific value which apply particularly to women, children and infants.

Certainly the health of women, children and infants during times of war is of importance equal with the health of soldiers, sailors, factory workers and farmers.

He says, "It is during rapid growth and during the reproductive life of women that the mineral salts are especially in demand and it is at these times that lack of mineral salts causes or aggravates a number of well-known pathological conditions.

§ 42—THE BABY

"The normal food of the human infant naturally furnishes its full mineral requirement. This subject becomes of interest in this connection, therefore, in cases of artificial feeding and in certain metabolic derangements.

"For an artificial food we naturally turn first to cow's milk which because of high fat and casein content must be liberally diluted. If water is used, the necessary dilution reduces the minerals, the albumen, the lecithin and the so-called accessory nutrients to an undesirable extent.

"The best diluent is whey, which any one can pre-

pare with the aid of a thermometer and a commercial rennet preparation in a few minutes. (The whey must be heated to 68 degrees C. or 154 degrees Fahrenheit to kill the enzyme, before it is mixed with milk).

"With combinations of whey, skim milk, cream and milk sugar you can play any dietetic tune you please on the infant organism, and with these foods the intelligent parent can rear any infant which can live at all. The especial usefulness of whey is due to its abundant mineral content in natural physiological solution. It serves as a stabilizer—a corrective.

"You can do no harm with whey unless you use the evaporated preparation, whey powder. It is possible by an abuse of this food to cause edema (in weak infants) through excessive ingestion of minerals, though this would never occur in its proper use.

"The commonest metabolic disturbance in infants is gastro-intestinal indigestion. Its commonest cause is a weak digestive apparatus and too much fat in the food. Alkali soaps, formed in the intestine, instead of being digested and absorbed are passed off in the feces.

"Alkalis are lost to the organism; mineral acids are left to predominate; infantile acidosis ensues.

"Because of its low oxidative capacity the infant organism is especially subject to acid intoxication from relatively slight causes, the acid excess being due to the normal acid products of metabolism and to imperfectly oxidized organic compounds, especially betaoxybutyric acid. We have mentioned the weak digestive apparatus and deficient capacity to

handle fat. Inanition also causes acidosis in infants. Fever is a very common cause.

"In all these cases whey is especially valuable. Many a child has been taken through long sieges of fever on whey. Children do not lose weight rapidly on whey alone. Egg white and fruit juices, especially that of the orange, may be used with whey to advantage; they furnish some nutriment and appreciable amounts of alkali.

"The infant is born with a store of iron within its body. During the nursing period this store is gradually depleted, since the milk contains little iron.

"At weaning time the infant stands in need of iron. This is usually supplied in egg yolk, prunes, whole wheat foods and oatmeal, and some physicians of unquestioned standing recommend spinach. I happen never to have seen spinach used, however, for an infant.

"Egg yolk is of especial value as a source of iron, calcium, phosphorus and lecithin. But it is an exceedingly rich food. It must be fed with great care on two accounts, first, to avoid making the baby sick, because, while it is usually well taken, it acts like poison to some infants, and second, because the value of egg is so great that it is especially unfortunate if you upset the infant by an over-allowance, since it may be a long time before it will regain its tolerance for this food.

"The existence in infants and older children of simple malnutrition of the bones, a common malady in young farm animals, is not well established; and the prevalent imperfections of children's teeth are due to the fine milling of our cereals and the increas-

ing use of sugar (a readily fermentable, acid-producing food)."

These comments of Forbes are supported by numerous other authorities, many of whom are to be found in the Public Health Service of the United States Government.

To repeat, "A high mineral content of the food is desirable since the organism is much better able to handle an excess of mineral salts than to meet a deficiency."

Our white breadstuffs, bolted corn, pearled barley, polished rice, the breakfast foods made of highly milled grains like farina, cream of wheat, corn flakes, pancake flour, pies, biscuits, crackers, crullers, doughnuts, muffins, cakes, corn starch puddings, refined sugar sweeteners, table syrups, vegetables served apart from the water in which they are cooked and meats are all deficient in alkaline salts. Whole meal bread, vegetables and fruits, whether fresh or dehydrated, dry milk powder or fresh milk supply an abundance of alkaline mineral salts.

Now is the time for the government to act upon these truths. Preparedness means more than the equipment of army and navy, the manufacture of rifles, guns and ammunition. It means first of all the stamina of the nation. The stamina of the nation rests upon adequate food and plenty of it.

The United States yields an abundance of such food and private industries, however powerful, should not be permitted to destroy its value, however great may be the individual profit which accrues at the expense of the nation.

§ 43—THE SOUP KETTLE

The soup kettle must be put back on the kitchen stove on which, in America, it has not stood for years. Into that soup kettle should be placed every bone and every scrap of meat not actually consumed at the table.

Such foods as now find their way into the garbage pail, only for the reason that we have become accustomed to disposing of them in that manner, should now be consigned to the soup kettle.

Celery tops and the rough outside pieces, which as a rule are not placed in the celery dish carried to the table, should surrender their flavorful extractives and benevolent mineral salts to the soup kettle.

Beet tops, the outer leaves and core of cabbage, lettuce and all the other green things usually looked upon in the American kitchen as waste, should be utilized in the making of soup stock.

The so-called inedible green tops of leeks and young onions and the tougher and more fibrous ends of asparagus should be used.

After parting with their invaluable alkalines, extracted from them in the soup kettle, the strainer may be used to remove such inedible pulp as is not desirable to serve at the dinner table.

These clear vegetable juices, although their value is rarely suspected by the average housewife, are of great importance to the nutrition of the growing child.

The soup bowl, neglected in the United States, has become a national institution in France and Germany.

§ 44—KITCHEN WASTE

When one passes through such American cities as Boston, New York, Chicago, St. Louis and San Francisco for the purpose of examining the character of the kitchen waste carted off daily to the garbage disposal plants, the evidence of our prodigality, which thus discloses itself, is sufficient to mark us as the most thriftless people in the world.

A tour of inspection that covers the hotel kitchens of our big cities emphasizes the justice of this characterization.

The janitor of every apartment house in the country can testify that the American home, even in the tenement house sections of the more congested districts, has set itself up as a rival of the hotel chef in the matter of converting valuable food into garbage.

In France even clean egg shells are used in soup making for the reason that they yield soluble calcium salts to the finished product.

Clean potato skins are utilized in the same way for the reason that they yield soluble iron and potassium salts.

Decayed and unclean particles of vegetable matter must necessarily be sent to the garbage pail. But, material of such character is obviously not included in these suggestions.

Soup made of clean vegetable waste can be described truthfully as the unpatented medicine of the kitchen stove.

§ 45—MINERAL FOOD

Henry C. Sherman says, "In view of the fact that herbivorous animals, which are less liable to anemia

than meat-eating animals, obtain their normal food iron entirely from vegetable sources there is every reason to suppose that man makes good use of the iron of the fruits and vegetables in his diet.

"Moreover, since (as Herter has shown) anemic conditions and excessive intestinal putrefaction often go together, the bulkiness and laxative tendency of fruits and vegetables, along with their relatively high iron content, is advantageous in combating the conditions which give rise to excessive putrefaction and at the same time increasing the supply of iron."

Of course, one does not use fruits in the making of soup. But Sherman's wisdom, even in his reference to fruits, is applicable to the soup kettle for the reason that fruits and vegetables are of value in the diet for reasons which are almost identical.

Vegetable waste contributes not only just as much mineral matter to the diet as is found in the parts usually consumed, but in many instances it contributes more.

Quoting Von Noorden Sherman says, "The necessity of a generous supply of vegetables and fruits must be particularly emphasized. They are of the greatest importance for the normal development of the body and all its functions. If we limit the most important sources of iron—the vegetables and fruits—we cause a certain sluggishness of blood formation and an entire lack of reserve iron such as is normally found in the liver, spleen and bone marrow of healthy, well-nourished individuals."

§ 46—MORE SOUP, LESS MEDICINE

That this reserve iron need not be outside the reach of the average household, even during times of forced economy, is a well-established fact.

The soup kettle is not noted by Sherman in his references to the experimental dietary study conducted in New York City in which it was found that a free use of vegetables, whole wheat bread and cheaper sorts of fruits with milk, but without meat, resulted in a gain of 30 per cent. in the iron content of the diet while the protein value, fuel value and cost remained practically the same.

But, it is certain that if the soup kettle had been put to work in these experimental dietary studies in order to utilize the vegetable waste of the household, it would have resulted in a gain of 50 per cent. instead of 30 per cent. of the iron content of the diet.

Iron is but one of the normal ingredients of soup. Potassium, sodium, magnesium and calcium are among the other ingredients.

Hundreds of patent medicines contain these identical substances, plus alcohol. But, in the case of the patent medicine its mineral content, unlike that of soup, consists usually of salts which the human body cannot appropriate. In the case of soup these salts are present in a form in which they are utilized at once.

More soup kettles mean fewer medicine bottles.

§ 47—EGGS

The annual waste of eggs, revealed January 5, 1914, by Dr. M. E. Pennington, chief of the food

research laboratory of the Federal Department of Agriculture, becomes more threatening every day. As the practice of food economy becomes a stern necessity the egg situation clamors for reform.

The value of the eggs produced annually in the United States prior to 1917 is about \$250,000,000. In 1917, as we shall see, the value of the eggs produced will be somewhere between \$400,000,000 and \$500,000,000.

Estimated on the figures of 1914, 1915, and 1916, eggs to the value of \$50,000,000 are completely lost every year. This year the loss, unless checked through the appeal of Commissioner Houston to the farmers, will total \$100,000,000 or more.

Dr. Pennington declares that in addition to this complete loss there is another loss of 30 per cent. due to deterioration in handling.

Dr. Pennington admits that her estimate of this loss is possibly a little too conservative, the trade people putting it much higher. The Chicago packers admit it is three times higher, or ordinarily \$150,000,000 annually.

In April eggs start on their way from the farm to the icehouse subject to all the vicissitudes of our present imperfect system of distribution.

§ 48—ALLOWED TO SPOIL

The farmer collects from his nests every day for a period of perhaps a week or two weeks. When he has gathered sufficient eggs to make a shipment he forwards the product to the assembler, who gathers eggs from many other farmers. When the assembler obtains sufficient eggs to make a carload

he ships to his agents representing the packers, commission men, warehouse men and other egg speculators.

The eggs are gathered in warm weather. A percentage of each carload lot consists of very fresh eggs, only a few days old, and other eggs, which are from a week to two weeks old. All were fresh before hostile atmospheric and temperature conditions had a chance to operate on them.

During April, May and June eggs, collected and handled as farm side-line products, from all parts of the south, southwest, and west, are placed in storage for use during October, November, December, January and February. Those eggs come out of storage no better than when they went in. All of them have to be candled before they are sold by the jobber to the retail grocer.

During the fall and winter 98 per cent. of all the eggs consumed are candled storage eggs. The other 2 per cent. consist of eggs more or less fresh, sold at fancy prices.

As the eggs are candled they are graded. The grading of eggs to the uninitiated is a curious and wondrous affair.

Most exchanges classify eggs as follows:

Fresh gathered,
Held,
Refrigerator,
Limed.

Each of these classes is in turn graded into:

Extras,
Extra firsts,
Firsts,

Seconds,
Thirds,
No. 1 dirties,
No. 2 dirties,
Checks,
Known marks.

There are many other subdivisions of each of these grades known as:

Fresh gathered extras,
Fresh gathered firsts,
Fresh gathered seconds,
Fresh gathered thirds.
Held firsts,
Held seconds.
Refrigerator extras,
Refrigerator firsts,
Refrigerator seconds,
Refrigerator thirds.
Limed extras,
Limed firsts,
Limed seconds,
Limed thirds.
Weak yolks.
Very weak yolks.
Heated eggs.
Leakers.
Crax.
Embryos.
Blood rings.
Light spots.
Heavy spots.
Musty eggs.
Black rots.
Red rots.

§ 49—THE SYSTEM

The best of these grades are packed in cartons of one dozen each and sold as "strictly fresh."

The "leakers," "crax," and "light spots" are broken out, packed in thirty-pound cans, frozen, and sold to bakers.

The system which permits a perfectly good egg to become partly bad, nearly bad, or entirely bad is not a system which should be tolerated even in times of plenty. In times of scarcity every farmer and every egg gambler in the land should be compelled, through federal intervention, to prevent the unnecessary loss, and all the evils growing out of it which we are about to describe.

Prior to 1917 April eggs were put into cold storage at a cost of between 18 and 21 cents a dozen. The storage charges for the season added 40 cents to this cost per case. Interest added 22 cents per case, cartage 3 cents, and insurance 6 cents, which added to the total 71 cents per case of thirty dozen each.

At 19 cents per dozen a case of thirty dozen eggs when it went into storage cost \$5.70. Plus the extra charges of 71 cents each case of eggs represented an investment of \$6.41, or 21 1-3 cents a dozen.

Six months later these same eggs were sold to the retail trade at from 29 cents to 40 cents a dozen. The retailer sold them to the consumer at prices ranging from 33 cents to 55 cents a dozen.

The egg gamblers who, November 1, 1913, still held 1,800,000 cases of storage eggs in New York, Chicago, Philadelphia, Boston and Jersey City at a total cost of \$11,538,000, including storage, inter-

est, cartage, and insurance, sold them at an average price of 30 cents a dozen or \$9 a case, thus realizing on the eggs held by them \$16,200,000, showing a profit of nearly \$5,000,000.

The jobber who purchased these eggs from the warehousemen sold them to the retailer at another profit of 2 cents a dozen or 60 cents a case, thus netting another lump sum of \$1,080,000.

The retailers' profit on the same eggs, at from 5 to 10 cents a dozen, was not less than \$3,000,000.

In all this taking of profit on the eggs sold in but five cities of the United States the consumer secured a food product ranging in quality from good to bad, the vast intermediate bulk of which can be accurately described as "poor."

In 1917 the situation as regards quality, loss through deterioration, and a clumsy, bungling system of handling remains unchanged. We have not only learned nothing from our mistakes of other years, but now stand face to face with a situation which threatens us with a nondescript mass of eggs which before Christmas, 1917, will be worth \$1 a dozen.

§ 50—THE GAMBLER

One New York City egg gambler of my acquaintance purchased on March 1, 1917, from fifty other egg gamblers 50,000 cases of eggs which would not even be laid until April on contract prices ranging between $25\frac{1}{2}$ and $26\frac{1}{4}$ cents a dozen.

The wholesale market price of eggs March 28, 1917, was 32 cents. The fifty little gamblers, who contracted to sell to the one big gambler (at from $25\frac{1}{2}$ to $26\frac{1}{4}$ cents a dozen) eggs so fresh that they

were still unlaid, found that they would have to pay 32 cents for the eggs, which they were forced to deliver at $25\frac{1}{2}$ and $26\frac{1}{4}$ cents.

The big gambler held them to their contracts. To look upon those contracts as scraps of paper would mean that they would lose their standing in the exchange. It would also mean the destruction of their credit. They had to pay to the big gambler an average gambling debt of 6 cents a dozen, or \$1.80 a case, on 50,000 cases, or \$90,000, as their penalty for speculating in eggs which had no existence and which neither the fifty little gamblers nor the one big gambler were ever destined to see.

Each of the fifty little gamblers must recoup his losses, every cent of which will sooner or later be charged up to the public.

This episode, which occasioned a tremendous furore in the New York Mercantile Exchange and the New York Butter and Egg Exchange, is characteristic of one of the food abuses over which no state in the Union attempts to exercise any control.

We now know that because heavy fowl sold in tremendous quantities in 1916 at prices as high as 26 cents a pound wholesale, and because grain is high that the outlook, due to a combination of natural shortage in production, a natural increase in the cost of production, the manipulation of the market by gamblers, and the inevitable demands of Europe for a heavy export, promises, with eggs going into storage at 31 cents, instead of 19, 20, or 21 cents, as in other years, they will begin to come out of storage in October at from 45 to 50 cents a dozen wholesale.

At these wholesale prices the warehouses will turn

them over to the jobbers who will sell them to the retailer at from 48 to 53 cents a dozen. The poorest of them will be sold to the consumer at from 60 to 65 cents a dozen and the best of them at from 85 cents to \$1 a dozen.

§ 51—FEDERAL CONTROL

These plain, unvarnished truths urge the federal commissioner of agriculture to extend his efforts to control a grave and intolerable situation considerably beyond the appeal which he has already made to the patriotism of the farmer and egg gambler.

The use of tons of spot eggs by pound cake bakers all over the country is one of the lamentable results of the failure of the federal government to attempt to control the slovenly and destructive system now employed in gathering, storing, and shipping eggs for market. The consumption of disguised rotten eggs by the public grows out of these wasteful methods.

The beginning of the trouble lies in the rules governing transactions in eggs in the mercantile exchanges of our large American cities.

These rules are so wide open that they admit to congested centers tons of rotten eggs which ought never to arrive and which the receiver who is obliged to pay for them charges up to the consumer.

§ 52—MANIPULATION

For instance, the regulations governing the classification known as "fresh gathered firsts" permit a case of such eggs to contain only 80 per cent. of full

sweet eggs, allowing a margin of 20 per cent. or a full six dozen of eggs, to consist of anything sweet with shells on.

Under these loose regulations the shipper can send to the city a mixture of eggs in which he works off as real "fresh gathered firsts" eggs that are not fresh gathered at all, but for which the full exchange price is paid.

"Extra firsts" are permitted to contain in each case $1\frac{1}{2}$ dozens of poor eggs for which the dealer pays the full market price.

"Firsts" are permitted to contain two dozen poor eggs to the case. The dealer pays the full market price for them.

"Seconds" are permitted to contain three dozen poor eggs to the case.

"Thirds" are permitted to contain five dozen poor eggs to the case.

If the loss on candling shows more than the maximum permitted by the exchanges the seller simply allows the buyer a discount of 5 per cent. The buyer then candles out his rots and spots, adds his loss to the cost of the good eggs and disposes of the rejects as best he can. The baker gets most of them.

The farmer does not profit by this arrangement and certainly the consumer derives no benefit from it. The egg gambler, who buys eggs before they are laid to sell from the storage warehouse six or ten months later, is the only man whose purse is filled through this operation.

In 1915 and 1916 the office of the attorney general of New York State collected evidence proving that egg gamblers systematically squeeze the market

through their refusal to put the price down to a figure at which the public will buy, holding their eggs instead as a "gamble on the future."

The attorney general's office proved that in addition to the surplus on hand in cold storage, fresh eggs were coming into the market every day and that many honest receivers were willing to take their losses on them and sell at lower prices, although the market quotations were, in the meantime, kept arbitrarily high in the hope that the receipt of fresh eggs during the following week might be light.

This system the state was able to prove forced the honest receiver of eggs to fall in line with the speculator in order to hold his shippers in the country. To do otherwise would quickly make it impossible for him to obtain any eggs at all. No farmer would ship to a receiver if the latter undersold or attempted to undersell the speculator.

§ 53—SUPPLY AND DEMAND

That this is the system which egg speculators describe as "the law of supply and demand" was charged as long ago as December 9, 1913, in a report filed with Federal Judge Kohlsaat by Charles B. Morrison, master in chancery.

Morrison's report alleged that within the Chicago Butter and Egg Board was a smaller organization known as the Elgin Butter and Egg Board, which sets prices for the wholesale market.

He declared that at periodical meetings these boards, acting in unison, established values in a manner that forced the wholesale prices down as low as possible during the flush period of production and

that agents were then sent forth to contract for all available products at the arbitrarily fixed quotations.

On the same day Representative McKeller of Tennessee, who charged the cold storage men with responsibility for high prices, assailed the Department of Agriculture for publishing a report which he described as an effort of the department to whitewash the cold storage men.

Investigations, all of them resulting in the same conclusions, have been conducted in Massachusetts, Missouri and Pennsylvania, as well as in New York and Illinois. In spite of these investigations and their findings the egg situation remains to-day in the same condition in which it has existed since cold storage became a national institution.

§ 54—THE BANKS

Powerful banking interests are seriously involved in the conduct of the egg business. In New York City the bankers loan the gamblers 75 per cent. of the value of the eggs in storage. In Chicago the bankers loan the warehousemen a hundred cents on the dollar for every egg stored. These loans are secured by constantly rising markets, and depend exclusively upon the regular, uninterrupted annual advance in values which begin to make themselves felt on a progressively increasing scale from the moment the egg is slipped into the refrigerator until, within a period of from six to ten months later, it emerges as "strictly fresh."

The question of prices is of universal interest. For the poor it is a matter of daily and often of

anxious consideration. Just prices and fair wages are two hinges on which revolves the economic welfare of the world.

§ 55—THE SHORT DOLLAR

March 29, 1917, the Department of Labor announced at Washington, D. C., that the annual food bill of the average family had grown from \$339.30 in 1913 to \$425.54 at the prices prevailing in March, 1917.

"In ten years the advance in the cost of food," declared the Department of Labor, "has so far outstripped wage increases that the workman who drew \$3 a day in 1907 now finds himself just 69 cents a day worse off.

"Despite the average increase of 19 per cent. an hour in wages in the last ten years," says the department's statement, "the rising cost of foods has operated to reduce the pay of the American workingman about 16 per cent., expressed in terms of food his dollar will buy.

"The workingman who made \$3 a day in 1907 working ten hours a day, in 1916 worked nine hours and thirty-six minutes a day and drew \$3.48; but it cost him \$4.17 to buy the same quantity of food his \$3 would cover in 1907.

"Cold storage, rebilling, reshipping, and withholding of commodities from the market are suspected of contributing to the present abnormal rise in the prices of food. There is reason to fear that other elements than crop shortages and war are conspiring to raise prices."

The Department of Labor, expressing its views

in this singular manner, did not know how accurately it hit the bull's-eye.

On the proper solution of the problems of just prices and fair wages depends far more than the mere material prosperity of a nation.

Extortionate prices and unfair wages form together one of the most serious social and moral perils of the age.

§ 56—COMMERCIAL ETHICS

The ethics of modern commercialism are not the ethics of justice. "Demand for your product the highest returns you can prudently hope to gain," is one way of putting it in the trade. "We all want all we can get for anything provided we can get it without indictment," is another way of saying the same thing.

Justice, the meaning of which is now absorbing the attention of all the people of Europe and America, permits a margin of profits which will enable commerce to flourish in a healthy state and allow the life blood of trade to circulate freely through the veins and arteries of the social body for the common good.

Justice forbids excessive charges, a source of wealth to a few and a cause of hunger to many.

The transactions of Mercantile Exchanges in butter, eggs, poultry, fruits, produce and provisions are all based on the theory that there is no decalogue in trade.

The golden rule on which these transactions are based reads something like this, "Keep within the bounds of the law and do not exasperate the people

to the danger point. Eliminate competition by all expedient means that you may safely increase your demands and multiply your profits in the surest way you can."

§ 57—SPECULATION

Blue fish, for example, are put into cold storage in New York City at 9 cents a pound. After being held at a cost of one-half cent per pound per month they are taken out of cold storage at 25 and 30 cents a pound and shipped all over the country to be sold to the consumer at such prices as the consumer will pay.

In June butter is put into cold storage to be taken out in the fall and winter at an arbitrary and fabulous advance in price.

The legitimate functions of cold storage in carrying perishable foods from the glut season of the year to its lean periods are to be encouraged. But, the taking of excessive toll for no other reason than that one is able to withhold from commerce large quantities of foods from six to ten months, outrages justice, contributes nothing to the material prosperity of the masses, shrinks the purchasing power of the daily wage, and begets many internal social and moral evils.

All efforts of the state and nation which have thus far been made to control speculation in food products have aborted.

In times like these, when bloodless revolutions are possible, even in Russia, it behooves the government to take seriously an issue with which heretofore it has merely toyed.

Our commercial standards of food speculation

may be protected by law, but they have no element of justice or patriotism in them, and are therefore doomed. The sooner we heed this issue the sooner will many grave perils from within, now gnawing at the peace and welfare of our country, cease to disturb its social equilibrium and threaten with a disaster as terrible as war.

§ 58—MOBILIZATION

These, then, are suggestions for the mobilizing of all our forces in order to produce and properly market sufficient foods to keep ourselves and our allies in a state of health during the present war:

1—Mobilize all our school and college boys from the ages of 16 to 19. Organize them into camps or squads. Assign them during the planting and harvesting periods to the zones in which they are needed. Put them to work in the fields, orchards and food factories. They will look upon their experience as a lark and it will make men of them.

2—Place under federal control the railroads, packing establishments, grain elevators, milling establishments and cold storage warehouses.

3—Construct portable dehydrating plants on freight car wheels so that they may be placed on sidings within trucking distance of all the farms of the country known by the Department of Agriculture to have allowed in other seasons their vegetables and fruits to rot for the reason that it did not pay to gather them, crate them and send them to market. Unskilled labor (boys) through the use of these portable dehydrating plants and those which justify a permanent structure can conserve for human use

the 50 per cent. of vegetables and fruits which federal officials inform us never reach the human table.

4—Place under federal control the fishing industry of the Atlantic and Pacific Coasts so that the enormous waste which results from our present system of rejecting “unsizeable” fish may be immediately discontinued.

5—At the point of production brine and smoke all haddock and freeze and glaze all small fish that cannot be transported and consumed as fresh within three days of the catch.

6—Begin at once to organize the methods to be employed in 1918 in gathering, shipping and storing fresh eggs.

7—Organize at once a system to take effect immediately for the purpose of controlling the sanitary character and drying for human food the skim milk of the butter-producing states not utilized in the manufacture of cheese.

8—Stop immediately the refining of wheat, the bolting of corn and rye, the pearling of barley and the polishing of rice.

9—Stop the use of grains in the feeding of cattle other than milk cows.

10—Stop the distillation of grain alcohol and whiskey except for medicinal purposes.

11—Stop the manufacture of technical products from corn.

12—Slaughter and store, to be used as needed, all steers and swine.

13—Stop the manufacture of highly milled and processed breakfast foods. Winnow all cereals for the zones in which they are needed, not to anticipate the actual requirements of such zones during the

germinating period, June, July, August and September, by more than thirty days. The adoption of this system will overcome all objections to the milling of whole grains now based on the fact that during the germinating period grains containing germ and bran are subject to weevil infestation and spoilage due to the decomposition of the fats of the germ.

14—Adopt regulations discouraging the purchasing of large orders of foodstuffs by individuals to be stowed away for future use. This panic-stricken looting of the nation's food supply by the individual consumer is quite as serious in diverting enormous food stocks from their legitimate channels as unregulated storage and unrestricted home waste.

If radical action is taken on those fundamentals, all of which can be modified in accordance with the unforeseen difficulties which time and place evoke, we will not only have sufficient food to supply all the wants of America, but from our reserve we can afford to assist our allies by exporting thousands of tons.

If we do not do these things much misery lies ahead.

